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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,390	10/02/2003	Sun-Chueh Kao	2002U024.US	9552

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EXAMINER	
BROWN, JENNINE M	
ART UNIT	**PAPER NUMBER**
1755	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/677,390	Applicant(s) KAO ET AL.	
	Examiner Jennine M. Brown	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 October 2005*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26 and 45-73* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-26, 45-73* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Finality

The finality of the office action mailed on 8/4/05 has been withdrawn in view of the after final amendment filed 10/4/05.

Claims Analysis

The examiner asserts that the "modified" Ziegler-Natta catalyst in the primary claims do not necessarily have to be a passivated, deactivated or latent catalytic composition.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 7-26, 45-48, 51-71 are rejected under 35 U.S.C. 102(e) as being anticipated by Ehrman, et al. (US 6753390 B2).

See entire document. Ehrman, et al. disclose catalyst system comprising at least one catalyst compound and at least one activator and optionally supports (col. 2, l. 29-43). Bimetallic catalysts are disclosed in the gas phase polymerization of ethylene in a reactor (col. 4, l. 28-43). The bimetallic catalyst comprises a first catalyst component and second catalyst component wherein the first catalyst component is not the same as the second catalyst component and is preferably a Ziegler-Natta catalyst and the second catalyst is preferably a metallocene catalyst (col. 5, l. 1-19). Ehrman, et al. disclose that the first and second catalyst can be supported on the same support material (col. 5, l. 20-27) or on separate support materials (col. 5, l. 27-34). $TiCl_4$ is one embodiment of the first catalyst and other such transition metal oxides and chlorides (col. 6, l. 5-19) combined with a support material such as organomagnesium (col. 6, l. 20-col. 7, l. 12). The metallocene (col. 7, l. 20-col. 19, l. 9) disclosed can comprise one or two cyclopentadienyl pi bonded ring systems (col. 7, l. 20-col. 8, l. 3), metal atom from groups 3-12 of the Periodic Table of the Elements (col. 8, l. 4-27), bridging groups (col. 8, l. 64-col. 10, l. 28). An activator is disclosed as any compound or combination of compounds, supported or unsupported which can activate a Ziegler-Natta or metallocene catalyst compound (e.g., aluminoxane, ionic compounds – col. 19, l. 11-col. 22, l. 17). Specific supports are also disclosed (col. 22, l. 19-col. 24, l. 27). Ehrman, et al. disclose that the catalyst system can include any combination of activators and catalyst components, either supported or not supported, in any number of ways (col. 24, l. 28-31). The catalyst is used in the bimodal polymerization of two or more olefin monomers of ethylene, propylene, 1-butene, 1-pentene, 1-hexene, 1-heptene, 1-octene, 1-nonene, 4-methyl-1-pentene, 1-isobutene and 1-decene (col. 27, l. 17-21). Addition of water is also disclosed (col. 31, l. 39-47). Reactor temperature is claimed between 80 and 100 degrees C (col. 38, l. 32) as well as the productivity of at least 3000 g polymer/g catalyst, preferably at least 4000 g polymer/g catalyst and even above 6000 g polymer/g catalyst (col. 26, l. 2-12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4-6, 49-50 and 72-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrman, et al. (US 6753390 B2) as applied to the claims supra, in view of Szul, et al. (US 6372868 B1).

Ehrman, et al. disclose a method of producing a bimetallic catalyst supra. Ehrman, et al. do not specifically disclose that the aluminum modifier has one or two halide, alkoxides, alkylamides and combinations thereof. Ehrman, et al. do not specifically state whether the Ziegler-Natta catalyst is activated or not activated.

Ehrman, et al. dos not specifically disclose the Mw/Mn values between 10 and 80 for bimodal polyethylene and a Mz of greater than 1,000,000.

Szul, et al. cures the deficiencies of Ehrman, et al. by disclosing said methodology for introducing multiple catalysts into a gas or slurry phase reactor (col. 2, l. 49-51) noting that prior art discloses the use of a metallocene (col. 8, l. 12-col. 12, l. 38) and Ziegler-Natta type catalyst (col. 13, l. 41-col. 14, l. 4) in the same reactor to produce a bimodal molecular weight distribution high density polyethylene (col. 1, l. 13-17). Szul, et al. disclose modifiers such as diethyl aluminum chloride (aluminum modifier with one halide - col. 15, l. 28-32 and optionally water – col. 18, l. 24-26) and notes that additives, modifiers and catalyst poisons affect the decay characteristics of the catalyst (col. 16, l. 55-60) wherein depending on the specific embodiment, the organometallocene may be activated or deactivated (col. 18, l. 36-40; col. 24, l. 53-59) and alternatively each catalyst may be combined with an activator prior to injection into the reactor (col. 20, l. 50-57). Szul, et al. disclose an Mw/Mn of between 15 and 80 and molecular weight above 300,000 (col. 25, l. 1-44).

Since the catalyst systems are both bimetallic catalyst systems, and comprise each of the claimed elements, disclose a method of making said bimetallic catalyst and a method of producing bimodal polyethylene, it would have been obvious to one of ordinary skill in the art to substitute the specific alkyl aluminum halide for the alkyl aluminum compounds cited in Ehrman, et al. depending on how soluble the aluminum compound is in the specific system used and that activation or deactivation would be appropriately used to decrease the decay characteristics of one or both of the catalysts combined to provide the bimetallic catalyst and the bimodal polyethylene produced would have the Mz properties claimed because the Mw/Mz are overlapping.

Double Patenting

The previous rejection under obviousness double patenting is withdrawn based on the cancellation of the previously rejected claims.

Response to Arguments

The examiner has reopened prosecution in order to include the rejection of the catalyst productivity which was overlooked in the previous office action and to provide new rejections of the remaining claims. Applicant argues that the process steps are not specifically contacting the Ziegler-Natta catalyst with the modifier then contacting with the metallocene. Examiner reminds applicant that the order of addition of each of the elements was not a critical aspect as disclosed in Ehrman, and therefore would be anticipatory of the claimed process steps without specific evidence to show that the claimed combination would provide unexpected results over the prior art. As such the rejection has been maintained herein and the finality withdrawn.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennine M. Brown whose telephone number is (571) 272-1364. The examiner can normally be reached on M-R 9:30 AM - 7:30 PM; Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmb

J.A. LORENGO
SUPERVISORY PATENT EXAMINER